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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/699,772	10/30/2000	Sehat Sutardja	MP0018	6955

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EXAMINER
KINKEAD, ARNOLD M

ART UNIT	PAPER NUMBER
2817	

DATE MAILED: 07/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/699,772	Applicant(s) SUTARDJA, SEHAT
	Examiner Arnold M Kinkead	Art Unit 2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-67 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2,7-9,11-13,15,17-55,57-60 and 63-66* is/are allowed.

6)☒ Claim(s) *1,3-6,10,14,16,56,61 and 62* is/are rejected.

7)☒ Claim(s) *67* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities: on line 10, " gain determining" should read—gain determining impedance--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 61 and 62 are rejected under 35 U.S.C. 102(b) as being anticipated by Hajimiri et al(cited by applicant, of record).

The reference by Hajimiri et al discloses an oscillator (see figure 5 and p. 719,part B.) having cross-coupled, frequency-dependent feedback amplifier, where MOSFET(NMOS (lower pair)and PMOS) are implemented. As noted an attenuating device including tail capacitor as well as the LC tank capacitor is disclosed. Inductor(L) and capacitor(C) are shown. Finally, current sources(biasing) is represented by(Itail). (See p. 720, second col. last three lines where flicker noise is discussed-page 721). The sizing of the cross-coupled NMOS and PMOS mitigates/attenuates the 1/f noise that maybe upconverted to affect phase noise. The method steps being inherent.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3-6,10,14,16, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hajimiri et al(IEEE Journal of Solid State Circuits, May 99, cited by applicant) and further in view of Prior Art figure 2.

The reference by Hajimiri et al discloses an oscillator (see figure 5 and p. 719,part B.) having cross-coupled, frequency dependent feedback amplifier, where MOSFET(NMOS (lower pair)and PMOS) are implemented. As noted an attenuating device including tail capacitor as well as the LC tank capacitor is disclosed. Inductor(L) and capacitor(C) are shown. Finally, current sources(biasing) is represented by(Itail). (See p. 720, second col. last three lines where flicker noise is discussed-page 721). The sizing of the cross-coupled NMOS and PMOS mitigates/attenuates the 1/f noise that maybe upconverted to affect phase noise. The method steps being inherent.

The reference does not show several conventional differential amplifier configurations with regards the LC elements being arranged between the supply voltage terminals with first and second biasing sources coupled to the common source nodes of the NMOS transistors. Also not shown is an implementation of this LC oscillator within a RF communication transmitter for use as a Local oscillator for carrier signal generation.

With regards the latter idea, the use of LC oscillators for carrier signal generation is notoriously well known in the art and one of ordinary skill in the art would recognize the use of such low noise oscillators in RF applications.

Also, the Prior Art figure 2, is being relied upon for showing the general LC configuration where the frequency dependent gain impedances (L1,L2, C1,C2)are coupled between the supply voltage Vcc and ground. The use of a single current biasing means instead of two separate biasing means is a simple matter of design consideration and reduces the size of the overall circuit.

In light of the above one of ordinary skill in the art would have recognized that the particular LC oscillator configuration of Hajimiri et al with attenuating means would also be applicable to all other LC oscillator differential configurations(as shown by Prior art figure 2) to help reduce phase noise in RF communication application as is desired and notoriously well known in the art. The use of a single current means helping to reduce circuit complexity.

Allowable Subject Matter

5. Claims 2,7-9, 11-13,15, 17-55, 57-60, and 63-67 are allowed. The examiner could not find fair suggestion in the prior art for the characterization of the attenuating device as in claim 2 (and 15)now allowed. The allowed independent claims 7,10, 11,12,15,25,35,46,57,62,63,64,65, and 66 claim additional components including second attenuating means and gain determining impedance/circuits that are not suggested in the prior art.. The use of programmable inductance/resistance is not shown for the current sources as claimed.

Response to Arguments

6. Applicant's arguments filed 04-10-03 have been fully considered but they are not persuasive. The examiner has considered applicant' s concern that the reference to Hajimiri et al does not teach attenuation of the 1/f noise ,

however, the reference does indeed talk about such noise and describes the effort with regards to making sure the cross-coupled NMOS/PMOS transistors are sized correctly to form part of the attenuating means that reduces the 1/f noise that may be upconverted and thus contribute to phase noise. The attenuating device includes the tail capacitor as well as it must be sized carefully too.

Conclusion

7. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnold M Kinkead whose telephone number is 703-305-3486. The examiner can normally be reached on Mon-Fri, 8:30 am -5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner' s supervisor, Robert Pascal can be reached on 703-308-4909. The fax phone numbers for the organization where this application or

proceeding is assigned are 703-308-7724 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Arnold M Kinkead
Primary Examiner
Art Unit 2817

Arnold Kinkead
July 17, 2003